

Montana Weather/Precipitation Summary

June 2016 NOAA's National Weather Service Great Falls Montana

During June, a ridge of high pressure was over the central US, higher than normal for the month (Fig. 1). Temperatures were above normal most areas. Precipitation was mostly below normal, except in the northeast. June's winds were slightly above the long-term average.

Statewide composite temperatures averaged 3.8°F above normal for the month. The red line on the graph to the right shows the cumulative 12-month departure from normal. The temperature anomalies ranged from -1.5°F at Polebridge to +6.8°F at Ekalaka (Fig. 2). The warmest average monthly temperature was 73.2°F at Broadus, and the coolest was 46.2°F at Flattop Mountain SNOTEL. This was the 20th warmest June of record. For the past 12-months, the statewide composite average temperature is 3.0°F above normal. Eleven of the last 12 months and 21 of the past 24 months have had warmer than normal temperatures.

The monthly departure from normal for precipitation across Montana is shown in Figure 3. Below normal precipitation values covered much of the state. Thunderstorms with heavy rain produced amounts over 6-inches over portions of northeast Montana. The highest amount recorded was 6.37-inches at Homestead (Sheridan). Statewide, this month averaged 1.26", or 1.10" below normal. The statewide composite precipitation for the past 12 months is 0.17" below normal. The green line on the graph to the right shows the cumulative 12-month departure from normal. Eight of the past 12 months have measured above normal precipitation.

The statewide average winds were stronger than normal in June, ranking as the 29th windiest June of record. The statewide composite average was 8.9 mph, 0.2-mph above normal. The brown line of the graph to the right shows the 12-month cumulative statewide wind departure from normal. The 12-month average is running 0.2-mph below average. Only four of the past 12 months have had above normal average speeds. The fastest average speed was 12.6 mph at Cut Bank. Strong thunderstorm gusts were reported this month. On the 10th, gusts of 91 mph occurred at Jordan (Garfield) and 112 mph near Roy (Fergus). This is the third highest June wind gust of record for Montana, and the highest June gust since thunderstorms produced gusts to 124 mph on June 6, 1995 north of Chester.

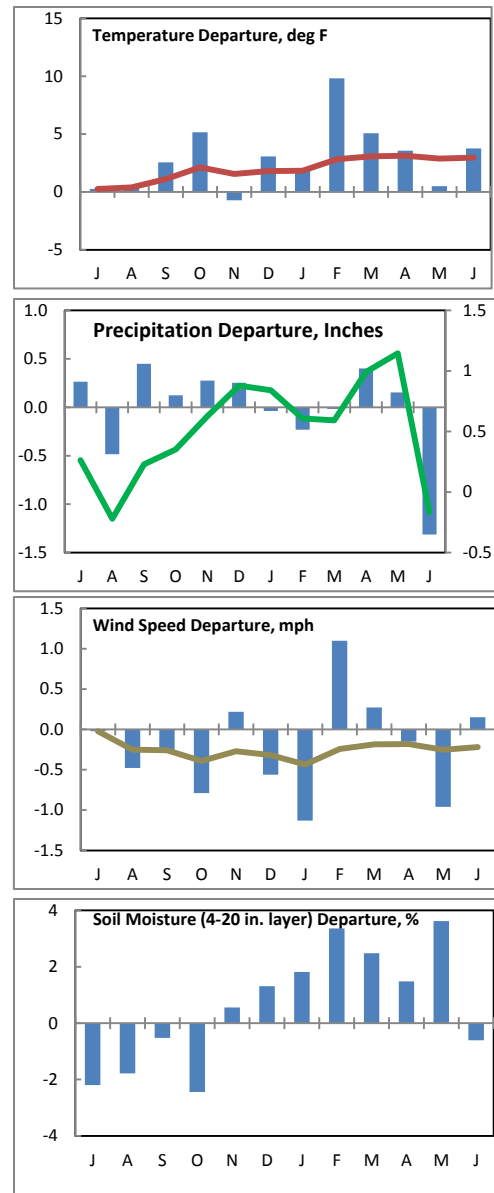
Composite statewide soil moisture was slightly below normal for June. The average of 22.6-percent is 0.6 points below the 22-year average of 23.2-percent. This is the lowest June value since 2006.

Refer to NEIC's State of the Climate report for the latest monthly discussion:

<http://www.ncdc.noaa.gov/sotc/>

June 1-11

Warm conditions prevailed for the first one-third of June. Record high temperatures were set at locations on the 6th and 8th, primarily in central and western Montana. Scattered severe



thunderstorms occurred on the 7th-11th, with the most widespread severe on the 9th-11th. Hail of 2.5 to 2.75-inches fell near Jordan, Roy and Square Butte. Wind gusts reached 72 mph at Baker on the 9th, and 91 mph at Jordan and 112 mph near Roy on the 10th. On the 11th, a tornado ripped through portions of Baker. Early in the morning of the 11th, a rare hailstorm moved through the Great Falls area causing damage to vehicles throughout the city.

June 12-25

A period of scattered rain showers and severe thunderstorms, along with below normal temperatures prevailed during the next segment of June. Thunderstorm gusts reached 70 mph near Saco, with 2-inch hail reported at Glasgow on the 18th. Strong downslope winds occurred on the 19th, with gusts reaching 75 mph at Two Medicine. The coolest period of the month was from the 17th-22nd. Elk Park registered a temperature of 20°F on the 17th, and Great Falls tied a record low of 39°F on the 22nd. Scattered severe thunderstorms continued on the 24th, with golf-ball size hail at Flatwillow, and wind gusts to 74 mph at Nohly (Richland).

June 26-30

Above normal temperatures returned for the last five days of the month. Scattered severe thunderstorms continued as well. Golf-ball size hail fell at Ekalaka on the 28th and at Kremlin on the 30th.

Precipitation/convection

Severe convective weather occurred on 15 days in June. The normal for the state is 12 days.

Water Year

The temperature was 40.0°F or 3.6°F above normal. This has been the warmest water year since 1992 and the 6th warmest of record.

The composite precipitation was 11.46-inches, 0.37" inches above normal. This was the 59th wettest water year to date, and the wettest since 2014.

Winds averaged 9.0 mph, the 15th calmest of record, and 0.2 mph below normal.

June summary information:

High Temperature	103°F at Bridger and Broadus (21 st)	Greatest Precip	6.37" at Homestead (Sheridan)
Low Temperature	20°F at Elk Park (17 th)		
Warmest Ave Temp	73.2°F at Broadus	Peak Wind Gust	112 mph near Roy (10 th)
Coollest Ave Temp	46.2°F at Flattop Mountain SNOTEL		
Range of Temp departures	-1.4°F at Polebridge to +6.8° at Ekalaka	Highest Ave Wind	12.6 mph at Cut Bank 16.5 mph at Deep Creek RAWS
21 city mean monthly Temperature/Normal	64.1/60.3F 3.8F above normal. 20 th warmest of record (since 1880). 85 th percentile. Oct-Jun 40.0/36.4 3.6F above normal. 6 th warmest of record.	20 city mean monthly wind speed/Normal	8.9 mph/7.7 mph; 29 th windiest of record (since 1936). 40 th percentile. Oct-Jun 9.0 mph/9.2 0.2-mph below normal. 15 th calmest of record.
22 city mean monthly precipitation/Normal	1.26"/2.36" – 53% of normal. 10 th driest of record (since 1880). 7 th percentile. Oct-Jun 11.46"/11.09" – 0.37" above normal. 59 th wettest of record.		

**Historical Rank of Precipitation (inches)
for the Current Month and Water Year to Date**

Location	Jun	% of Norm	Rank	Pcntl	Oct 1 – Jun 30	% of norm	Rank	Pcntl	Years
Baker	1.18	47%			8.26	102%			18
Billings	0.23	12%	99	84	8.08	72%	68	59	115
Belgrade	1.17	48%	58	72	8.92	83%	57	72	79
Butte	0.93	41%	86	70	7.20	79%	83	68	122
Cut Bank	1.16	45%	84	77	7.93	110%	45	41	108
Dillon	1.12	57%	54	70	6.60	90%	40	52	76
Glasgow	3.51	151%	31	25	14.70	191%	5	3	116
Great Falls	0.96	38%	101	80	12.08	118%	36	28	124
Havre	1.93	88%	74	54	11.75	160%	12	8	136
Helena	1.38	67%	85	61	6.20	80%	113	82	137
Jordan	0.84	34%			10.19	121%			18
Kalispell	1.34	52%	80	65	13.68	104%	37	30	122
Lewistown	0.76	25%	107	88	10.64	90%	72	60	120
Livingston	0.73	31%	95	83	10.05	91%	56	50	111
Miles City	0.69	27%	115	83	9.81	111%	60	43	139
Missoula	0.76	36%	101	73	9.25	85%	89	66	134
Mullan Pass	2.40	92%	43	55	43.39	128%	10	12	75
Wolf Point	3.20	118%			10.12	128%			18
Glendive	1.22	51%	95	79	8.22	91%	70	61	114
Sidney	0.94	34%	5	5	8.91	95%	37	48	76
BZN-MSU	0.87	28%	111	80	13.04	85%	81	59	136

Rankings and Percentiles are 1=driest, higher numbers=wetter.

For an automated version of this chart, updated daily, go to

<http://www.wrh.noaa.gov/tfx/dx.php?wfo=tfx&type=&loc=products&fx=PCPNTOTALS>

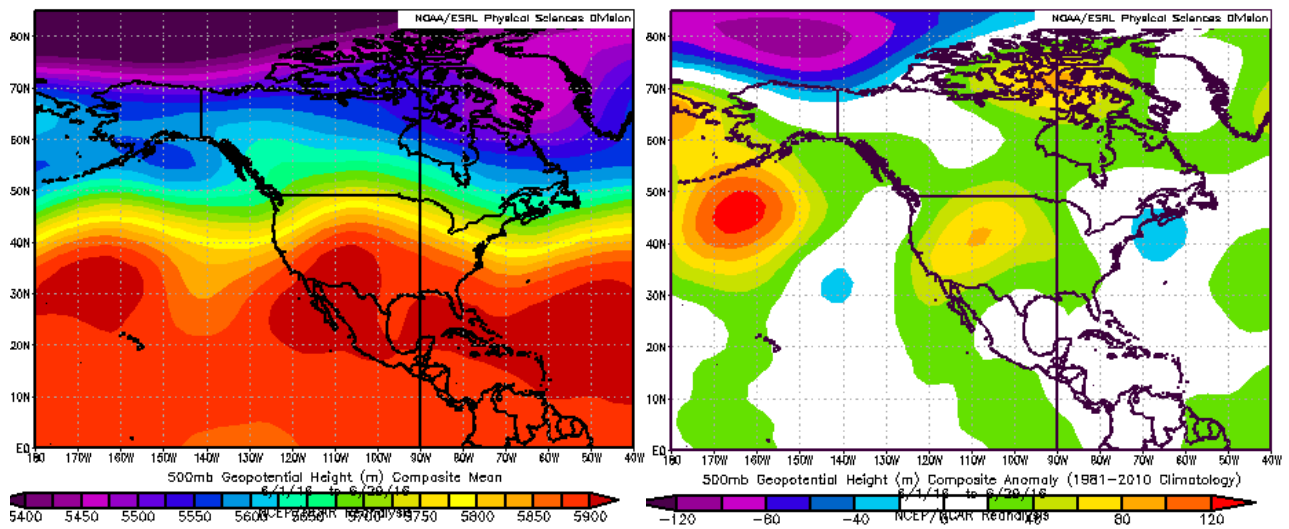


Figure 1. Mean flow at 500 millibars (~18,000 ft) for this month (left) and departure from normal (right).

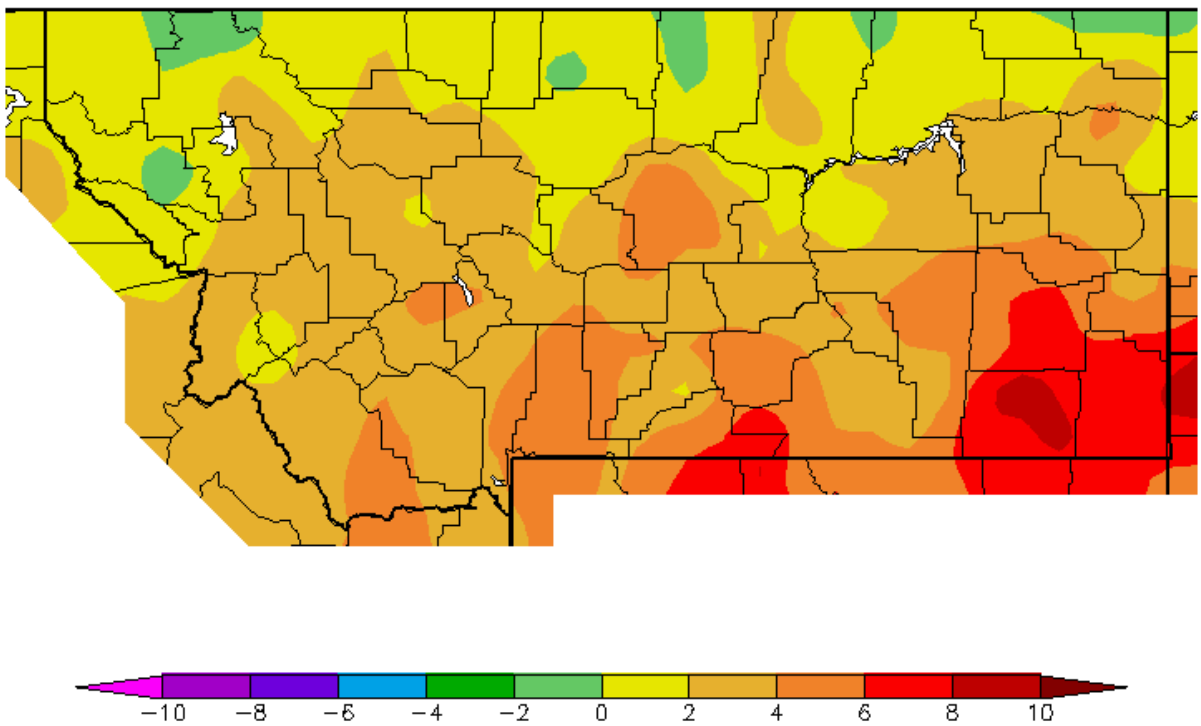


Figure 2. June 2016 temperature departures from normal (°F) (Western Region Climate Center).

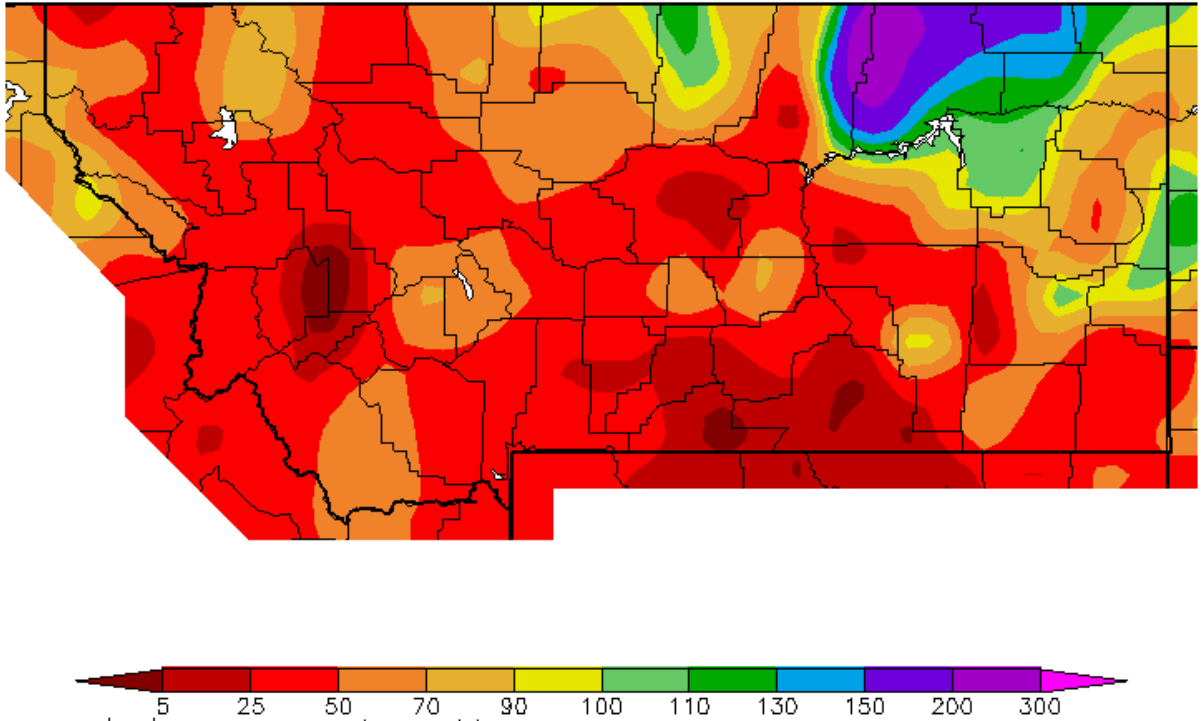


Figure 3. June 2016 precipitation departures from normal (percent) (Western Region Climate Center).

For a state map of % of normal water year precipitation (updated around the 7th of each month), go to:

<http://www.wrh.noaa.gov/tfx/climate/monthlysum/climatesum.php?wfo=tx>

For the latest information on mountain snowpack from the NRCS, go to: <http://www3.wcc.nrcs.usda.gov/snow/index.html>

For the latest U.S. Drought Monitor, issued weekly by the National Drought Mitigation Center, USDA and NOAA, go to:

<http://droughtmonitor.unl.edu/>

These data are preliminary and have not undergone final QC by NEIC. Therefore, these data are subject to revision. Final and certified climate data can be access at the National Environmental Information Center (NEIC) <http://www.ncdc.noaa.gov>. Many more links are on the Drought Information Page of the NWS Great Falls web site at <http://www.wrh.noaa.gov/tfx/main/drought.php?wfo=tx>. The climatological record for normals is 1981-2010. The ranking period for temperature, precipitation and snowfall is since 1880. The ranking period for wind speeds is since 1936. The ranking period for soil moisture is since 1995.